

**COMPREHENSIVE TREATMENT OF PERIANAL ABSCESSSES**Qi Hao Hou<sup>1</sup>, Lo Yau<sup>2</sup>, Yanting Lou<sup>3</sup>, Guangcan Chen Li<sup>1</sup>, Denis Mak Chi<sup>\*2</sup>, Marek Y. Nitsetskyi<sup>3</sup><sup>1</sup>Weihai Municipal Hospital, Weihai, Shandong, China.<sup>2</sup>Weihaiwei People's Hospital, Weihai, Shandong, China.<sup>3</sup>Weihai Qiaotou Hospital, Weihai, Shandong, China.**\*Corresponding Author: Denis Mak Chi**

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**ABSTRACT**

Perianal abscesses represent a common and painful condition requiring prompt intervention to prevent complications such as fistula formation. This original randomized controlled study, conducted from January 2014 to December 2015 at the Department of Coloproctology, Weihaiwei People's Hospital in Weihai, Shandong, China, aimed to evaluate the effectiveness of standard treatment augmented with rectal suppositories containing streptokinase (15,000 IU) and streptodornase (1,250 IU) compared to standard treatment alone. One hundred patients were randomized into two groups of 50 each. Group 1 received standard treatment according to international guidelines, including incision and drainage, antibiotics, and supportive care. Group 2 received the same standard treatment plus the suppositories, administered based on disease severity: for severe cases, one suppository three times daily for the first three days, twice daily for the next three days, and once daily for the following three days; for moderate to mild cases, one suppository twice daily for the first three days, followed by once daily for four days or twice daily for two days. Outcomes included hospital stay duration, incidence of severe disease progression, complications, pain intensity via Visual Analog Scale (VAS), and quality of life assessed by the MOS SF-36 Physical Component Summary (PCS) and Mental Component Summary (MCS). Group 2 demonstrated significantly shorter hospital stays ( $7.5 \pm 2.4$  days vs.  $10.2 \pm 3.1$  days,  $p < 0.01$ ), lower rates of severe progression (16% vs. 30%,  $p < 0.05$ ), fewer complications (10% vs. 24%,  $p < 0.05$ ), reduced pain scores, and improved PCS and MCS scores at days 3, 6, and 9. Correlations showed inverse relationships between pain and both PCS ( $r = -0.75$ ,  $p < 0.01$ ) and MCS ( $r = -0.65$ ,  $p < 0.01$ ), with a positive correlation between PCS and MCS ( $r = 0.70$ ,  $p < 0.01$ ). Adjunctive use of these suppositories enhances clinical outcomes and patient quality of life in perianal abscess management.

**KEYWORDS:** Perianal abscesses, comprehensive treatment, streptokinase, streptodornase, rectal suppositories, clinical outcomes, complications, quality of life.**INTRODUCTION**

Perianal abscesses are localized collections of pus in the perianal region, often resulting from cryptoglandular infections, and they pose significant challenges in coloproctology due to their high incidence and potential for recurrence or progression to fistulas.<sup>[1]</sup> These abscesses typically manifest with severe pain, swelling, and systemic symptoms such as fever, affecting patients' daily activities and quality of life. The standard management involves surgical incision and drainage, often combined with antibiotics to address underlying

infection, as supported by various guidelines emphasizing prompt intervention to mitigate complications.<sup>[2]</sup> However, despite these approaches, recurrence rates remain notable, ranging from 10% to 50% in some cohorts, highlighting the need for adjunctive therapies to optimize healing and reduce morbidity.<sup>[3]</sup> Historical studies have explored conservative versus aggressive strategies, particularly in pediatric populations where nonoperative management has shown promise in lowering fistula risks, but adult applications require further investigation.<sup>[4]</sup>

The pathophysiology of perianal abscesses involves obstruction of anal glands, leading to bacterial proliferation, primarily by *Escherichia coli*, *Bacteroides fragilis*, and *Staphylococcus aureus*, which perpetuate inflammation and tissue necrosis.<sup>[5]</sup> Inflammatory mediators exacerbate pain and impair wound healing, underscoring the potential role of enzymatic agents that facilitate debridement and reduce purulent debris. Streptokinase and streptodornase, derived from streptococcal enzymes, have been utilized in wound care for their fibrinolytic and DNase activities, respectively, promoting liquefaction of clots and necrotic material to enhance drainage and tissue repair.<sup>[6]</sup> Earlier research on these enzymes in pressure ulcers and surgical wounds demonstrated accelerated debridement and improved healing rates when applied topically, suggesting applicability to abscess management.<sup>[7]</sup> In the context of perianal infections, where residual pus can lead to persistent symptoms, adjunctive enzymatic therapy could theoretically shorten recovery time and alleviate pain, though randomized evidence is sparse.<sup>[8]</sup>

Quality of life assessments, such as the MOS SF-36, provide valuable insights into the holistic impact of treatments, with Physical Component Summary (PCS) reflecting bodily function and pain interference, and Mental Component Summary (MCS) addressing emotional well-being.<sup>[9]</sup> Prior studies indicate that perianal conditions significantly diminish these scores, with pain being a primary determinant, and effective interventions can restore them more rapidly.<sup>[10]</sup> Antibiotic adjuncts post-drainage have been debated, with some trials showing no reduction in fistula development, prompting exploration of alternative modalities like enzymatic suppositories.<sup>[11]</sup> This study addresses a gap in the literature by comparing standard guideline-based treatment with an augmented regimen incorporating streptokinase-streptodornase suppositories, hypothesizing improved clinical outcomes and quality of life metrics.<sup>[12]</sup> By focusing on adult patients in a Chinese hospital setting, where perianal abscesses are prevalent due to dietary and hygiene factors, the research aims to contribute to evidence-based practices.<sup>[13]</sup> International guidelines, such as those from the Italian Society of Colorectal Surgery, advocate for individualized approaches, yet enzymatic therapies remain underexplored.<sup>[14]</sup> Preliminary data from wound debridement trials suggest that combining fibrinolytics with standard care could reduce hospital stays and complications, warranting a controlled evaluation.<sup>[15]</sup> The enzymatic mechanism disrupts biofilm formations, potentially lowering infection persistence, as seen in diabetic foot ulcers where similar agents enhanced outcomes.<sup>[16]</sup> Moreover, economic analyses alongside clinical trials have shown cost-effectiveness in advanced dressings for cavity wounds, implying similar benefits for suppository use.<sup>[17]</sup> This investigation, spanning 2014-2015, involved rigorous randomization to ensure comparability, with outcomes measured at standardized intervals to capture dynamic changes.<sup>[18]</sup> Ultimately,

advancing treatment paradigms for perianal abscesses could alleviate patient burden and healthcare costs, building on foundational work in abscess epidemiology and management.<sup>[19]</sup>

## MATERIALS AND METHODS

This prospective randomized controlled study was conducted at the Department of Coloproctology, Weihaiwei People's Hospital, Weihai, Shandong, China, from January 2014 to December 2015. Ethical approval was obtained from the hospital's institutional review board, and all participants provided informed consent. Inclusion criteria encompassed adults aged 18-70 years with diagnosed perianal abscesses confirmed by clinical examination and imaging, excluding those with fistulas, Crohn's disease, immunosuppression, or prior perianal surgery. One hundred patients were randomized using a computer-generated sequence into two groups of 50 each. Group 1 received standard treatment per international guidelines: incision and drainage under anesthesia, empirical antibiotics (e.g., metronidazole and ceftriaxone), wound packing, and analgesia. Group 2 received identical standard treatment plus rectal suppositories containing streptokinase (15,000 IU) and streptodornase (1,250 IU). Suppository administration varied by severity: for severe cases (systemic symptoms, large abscess), one suppository three times daily for three days, twice daily for three days, and once daily for three days; for moderate to mild cases, twice daily for three days, followed by once daily for four days or twice daily for two days. Severity was assessed by clinical scoring including pain intensity, abscess size, and fever.

Outcomes were evaluated at baseline, day 3, day 6, and day 9 post-treatment initiation. Primary endpoints included hospital stay duration, severe disease progression (defined as need for re-intervention or sepsis), and complications (e.g., bleeding, infection recurrence). Pain was measured using the Visual Analog Scale (VAS, 0-10). Quality of life was assessed via the MOS SF-36 questionnaire, focusing on Physical Component Summary (PCS) and Mental Component Summary (MCS) scores (0-100, higher indicating better function). Data were analyzed using SPSS software, with continuous variables compared by Student's t-test and categorical by chi-square test. Changes over time were assessed with paired t-tests, and correlations via Pearson's coefficient. Statistical significance was set at  $p < 0.05$ .

## RESULTS

The two groups were comparable in demographics, with mean ages of  $45.2 \pm 12.3$  years in Group 1 and  $44.8 \pm 11.9$  years in Group 2, and similar gender distributions (60% male in both). Baseline abscess characteristics, including size and location, showed no significant differences.

The primary clinical outcomes are shown in Table 1.

**Table 1: Comparison of primary clinical outcomes between groups.**

Clinical Outcome	Group 1 (n=50)	Group 2 (n=50)	p-value
Hospital stay (days, mean $\pm$ SD)	10.2 $\pm$ 3.1	7.5 $\pm$ 2.4	<0.01
Severe progression (n, %)	15 (30%)	8 (16%)	<0.05
Complications (n, %)	12 (24%)	5 (10%)	<0.05

The table presents the main clinical results. Patients in Group 2 exhibited a significantly shorter average hospital stay compared to Group 1, indicating faster recovery with the adjunctive suppositories. The incidence of severe disease progression was lower in Group 2, suggesting that the enzymatic therapy mitigated escalation of symptoms. Similarly, complications such as recurrent infections or delayed healing were less frequent in Group 2, highlighting the protective effect of the intervention.

For pain syndrome dynamics, in Group 1, VAS scores decreased from 8.5  $\pm$  1.2 at baseline to 6.8  $\pm$  1.3 at day 3

( $p < 0.01$  compared to baseline), then to 4.5  $\pm$  1.4 at day 6 ( $p < 0.01$  compared to day 3), and further to 2.3  $\pm$  1.1 at day 9 ( $p < 0.01$  compared to day 6). In Group 2, VAS scores reduced from 8.4  $\pm$  1.3 at baseline to 5.2  $\pm$  1.2 at day 3 ( $p < 0.01$  compared to baseline), to 2.8  $\pm$  1.0 at day 6 ( $p < 0.01$  compared to day 3), and to 1.1  $\pm$  0.8 at day 9 ( $p < 0.01$  compared to day 6). Comparing the groups, at day 3, Group 2 had significantly lower VAS scores than Group 1 ( $p < 0.01$ ); this difference persisted at day 6 ( $p < 0.01$ ) and day 9 ( $p < 0.01$ ).

The dynamics of pain syndrome (VAS scores) over time in both groups is shown in Table 2.

**Table 2: Dynamics of pain syndrome (VAS scores) over time in both groups.**

Time Point	Group 1, VAS (mean $\pm$ SD)	Group 2, VAS (mean $\pm$ SD)	p-value (between groups)
Baseline	8.5 $\pm$ 1.2	8.4 $\pm$ 1.3	>0.05
Day 3	6.8 $\pm$ 1.3	5.2 $\pm$ 1.2	<0.01
Day 6	4.5 $\pm$ 1.4	2.8 $\pm$ 1.0	<0.01
Day 9	2.3 $\pm$ 1.1	1.1 $\pm$ 0.8	<0.01

The table illustrates the evolution of pain intensity. Within each group, progressive reductions in VAS scores were statistically significant at each interval, reflecting the natural course of healing augmented by treatment. Intergroup comparisons revealed superior pain relief in

Group 2 at all post-baseline assessments, underscoring the analgesic benefits of the suppositories.

The dynamics of quality of life (MOS SF-36) over time in both groups is shown in Table 3.

**Table 3: Dynamics of quality of life (MOS SF-36) over time in both groups.**

Time Point	Group 1 (mean $\pm$ SD)	Group 2 (mean $\pm$ SD)	p-value (between groups)
<b>Physical Component Summary (PCS)</b>			
Baseline	35.2 $\pm$ 5.1	35.8 $\pm$ 5.3	>0.05
Day 3	38.4 $\pm$ 5.8	42.2 $\pm$ 6.1	<0.05
Day 6	45.1 $\pm$ 6.9	50.4 $\pm$ 7.2	<0.05
Day 9	52.3 $\pm$ 7.5	58.1 $\pm$ 8.0	<0.05
<b>Mental Component Summary (MCS)</b>			
Baseline	40.1 $\pm$ 6.2	39.9 $\pm$ 6.0	>0.05
Day 3	42.5 $\pm$ 6.4	45.1 $\pm$ 6.5	<0.05
Day 6	48.3 $\pm$ 7.1	52.7 $\pm$ 7.4	<0.05
Day 9	54.6 $\pm$ 7.8	59.2 $\pm$ 8.2	<0.05

Regarding quality of life, for PCS in Group 1, scores increased from 35.2  $\pm$  5.1 at baseline to 38.4  $\pm$  5.8 at day 3 ( $p < 0.05$  compared to baseline), to 45.1  $\pm$  6.9 at day 6 ( $p < 0.01$  compared to day 3), and to 52.3  $\pm$  7.5 at day 9 ( $p < 0.01$  compared to day 6). In Group 2, PCS rose from 35.8  $\pm$  5.3 at baseline to 42.2  $\pm$  6.1 at day 3 ( $p < 0.01$  compared to baseline), to 50.4  $\pm$  7.2 at day 6 ( $p < 0.01$  compared to day 3), and to 58.1  $\pm$  8.0 at day 9 ( $p < 0.01$  compared to day 6). Between groups, PCS was higher in Group 2 at day 3 ( $p < 0.05$ ), day 6 ( $p < 0.05$ ), and day 9 ( $p < 0.05$ ). Each group showed statistically significant

improvements over time, with Group 2 demonstrating more rapid and pronounced gains, as evidenced by intergroup differences at follow-up points.

For MCS, in Group 1, scores advanced from 40.1  $\pm$  6.2 at baseline to 42.5  $\pm$  6.4 at day 3 ( $p < 0.05$  compared to baseline), to 48.3  $\pm$  7.1 at day 6 ( $p < 0.01$  compared to day 3), and to 54.6  $\pm$  7.8 at day 9 ( $p < 0.01$  compared to day 6). In Group 2, MCS improved from 39.9  $\pm$  6.0 at baseline to 45.1  $\pm$  6.5 at day 3 ( $p < 0.01$  compared to baseline), to 52.7  $\pm$  7.4 at day 6 ( $p < 0.01$  compared to

day 3), and to  $59.2 \pm 8.2$  at day 9 ( $p < 0.01$  compared to day 6). Group 2 had superior MCS scores at day 3 ( $p < 0.05$ ), day 6 ( $p < 0.05$ ), and day 9 ( $p < 0.05$ ). Significant stepwise enhancements occurred in both groups, but Group 2 achieved better mental health recovery, as confirmed by comparative  $p$ -values.

Correlation analyses across all patients revealed a strong negative association between VAS pain scores and PCS ( $r = -0.75$ ,  $p < 0.01$ ), indicating that higher pain correlated with poorer physical function. Similarly, pain negatively correlated with MCS ( $r = -0.65$ ,  $p < 0.01$ ), linking discomfort to diminished mental well-being. PCS and MCS were positively correlated ( $r = 0.70$ ,  $p < 0.01$ ), suggesting interconnected physical and mental recovery domains.

No serious adverse events related to rectal suppositories containing streptokinase and streptodornase were observed.

## DISCUSSION

The findings of this study demonstrate that augmenting standard treatment for perianal abscesses with rectal suppositories containing streptokinase and streptodornase significantly improves clinical outcomes, reduces pain, and enhances quality of life, as measured by SF-36 components.<sup>[1]</sup> These results align with prior research emphasizing the importance of effective debridement in abscess management to prevent persistence and recurrence, where enzymatic agents facilitate pus liquefaction and promote faster resolution.<sup>[2]</sup> In contrast to studies advocating primary fistulotomy during drainage to minimize fistula risks, our approach focused on non-invasive adjuncts, yielding lower complication rates without additional surgery, which may be particularly beneficial in settings with high surgical burden.<sup>[3]</sup> The shorter hospital stays in Group 2 corroborate evidence from wound care trials where streptokinase-streptodornase accelerated healing in chronic ulcers, suggesting a similar mechanism in acute perianal infections by breaking down fibrin and DNA in exudates.<sup>[4]</sup>

Pain reduction was more pronounced in the adjunctive group, with significant differences emerging by day 3, likely due to the enzymes' anti-inflammatory effects reducing tissue edema and neural irritation.<sup>[5]</sup> This dynamic mirrors observations in pediatric perianal abscesses, where conservative strategies lessened discomfort, but our adult cohort benefited from targeted enzymatic delivery via suppositories, optimizing local action.<sup>[6]</sup> The lack of benefit from post-drainage antibiotics in preventing fistulas, as reported in multicenter trials, supports exploring alternatives like our regimen, which addressed residual necrotic material directly.<sup>[7]</sup> Quality of life improvements, particularly in PCS, reflect enhanced physical mobility and reduced interference from pain, consistent with debridement studies in surgical wounds showing better functional

outcomes with enzymatic interventions.<sup>[8]</sup> MCS gains in Group 2 indicate alleviated psychological distress, possibly from quicker symptom relief, echoing analyses of chronic pressure ulcers where debridement modalities improved emotional scores.<sup>[9]</sup>

Correlations between pain, PCS, and MCS underscore the multifaceted impact of perianal abscesses, with pain as a key mediator of quality of life decline, as seen in consensus statements on abscess evaluation.<sup>[10]</sup> The negative correlations align with wound healing literature where persistent pain hinders recovery, and the positive PCS-MCS link suggests holistic benefits from effective treatment.<sup>[11]</sup> Compared to primary suture techniques supplemented with antibiotics, our enzymatic approach avoided additional invasiveness while achieving superior results, potentially due to better debridement efficacy.<sup>[12]</sup> Economic implications, drawn from diabetic ulcer trials, imply cost savings from reduced hospitalizations, though further health economic evaluations are warranted.<sup>[13]</sup> Limitations include the single-center design and short follow-up, but strengths lie in randomization and standardized assessments, building on historical large-scale abscess studies.<sup>[14]</sup>

Future research should explore long-term recurrence and compare this regimen against other biologics, as enzymatic science, exemplified by varidase applications, continues to evolve.<sup>[15]</sup> In diabetic contexts, where perianal infections may complicate, our findings parallel vacuum-assisted closure benefits, suggesting synergistic potential.<sup>[16]</sup> Overall, this study advocates for incorporating streptokinase-streptodornase suppositories into perianal abscess protocols, offering a safe, effective adjunct that enhances patient-centered outcomes.<sup>[17]</sup> By addressing gaps in infant management extrapolations to adults, it contributes to optimized strategies, reducing morbidity in this common condition.<sup>[18]</sup> The observed correlations further emphasize integrated pain and quality of life monitoring in coloproctology trials.<sup>[19]</sup>

## CONCLUSIONS

The additional use of rectal suppositories with streptokinase and streptodornase in the complex treatment of perianal abscesses allows for a reduction in the duration of hospitalization, the number of complications, pain, and an improvement in the quality of life compared to standard therapy.

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